WHAT IS CLAIMED IS:

1.- A composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte, characterized in that it comprises:

(a) at least one polyorganosiloxane (POS) (A) comprising siloxyl units of formula (I):

$$R^1{}_xR^2{}_yR^3{}_zSiO_{(4-x-y-z)/2} \text{ (I)}$$

in which formula the various symbols have the following meanings:

x, y and z are integers with $1 \leq x+y+z \leq 3$;

the R^1, R^2 and R^3 radicals are identical to or different from one another and represent an optionally substituted, linear or branched, C_1-C_{12} alkyl radical, an optionally substituted C_5-C_{10} cycloalkyl radical, an optionally substituted C_6-C_{18} aryl radical, an optionally substituted aralkyl radical or an $-OR^4$ radical where R^4 represents a hydrogen or a linear or branched alkyl radical having from 1 to 15 carbon atoms, and

with the conditions that the POS (A) comprises, per molecule:

- at least 2 siloxyl units of formula (I), one of the radicals of which comprises a functional group of epoxy type (Epx) and optionally a functional group of ether type (Eth); and
- at least one of the siloxyl units of formula (I) comprises at least one radical carrying a polyoxyalkylene (Poa) ether functional group;

(b) at least one electrolyte salt; and

(c) an effective amount of at least one cationic and/or radical photoinitiator.

2.- The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 1, characterized in that the composition comprises at least one POS (B) of formula (II)

$$R^1{}_xR^2{}_yR^3{}_zSiO_{(4-x-y-z)/2} \text{ (II)}$$

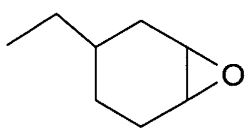
in which formula the various symbols have the following meanings:

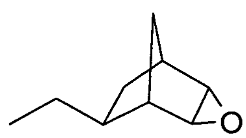
x, y and z are integers with $1 \leq x+y+z \leq 3$;

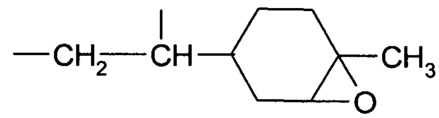
the R^1, R^2 and R^3 radicals are identical to or different from one another and represent an optionally substituted, linear or branched, C_1-C_{12} alkyl radical, an

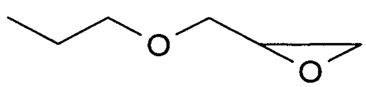
optionally substituted C_5-C_{10} cycloalkyl radical, an optionally substituted C_6-C_{18} aryl radical, an optionally substituted aralkyl radical or an $-OR^4$ radical where R^4 represents a hydrogen or a linear or branched alkyl radical having from 1 to 15 carbon atoms;
with the condition that the POS (B) comprises, per molecule, at least 2 siloxyl units comprising a functional group of epoxy type (Epx) and optionally a functional group of ether type (Eth).

3.- The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in either of the preceding claims, characterized in that the radical carrying a functional group of epoxy type (Epx) which can optionally carry a functional group of ether type (Eth) is chosen from the following radicals:

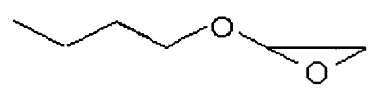

;
(III)


;
(IV)


(V)

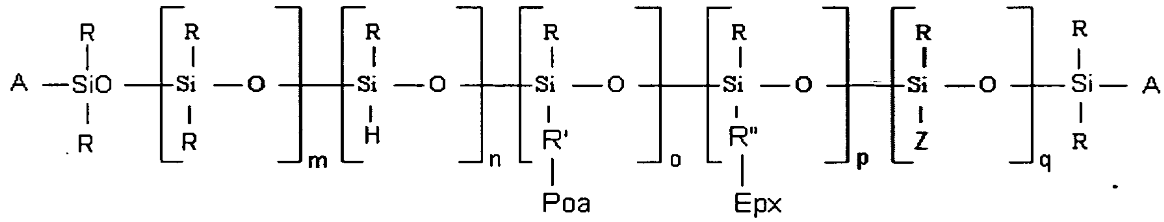

(VI)

and


(VII)

4.- The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 1, characterized in that the polyoxyalkylene (Poa) ether group is of polyoxyethylene ether and/or polyoxypropylene ether type.

5.- The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in one of the preceding claims, characterized in that the POS (A) is an essentially linear random or block copolymer of following mean general formula (VIII):

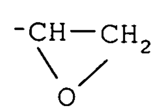


(VIII)

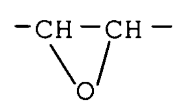
which can optionally comprise units of formula $RSiO_{3/2}$ (T);

in which formula:

- the R symbols, which are identical to or different from one another, each represent an optionally substituted, linear or branched, C_1-C_{12} alkyl radical, an optionally substituted C_6-C_{18} aryl radical, an optionally substituted C_5-C_{10} cycloalkyl radical or an optionally substituted aralkyl radical;
- the Z symbols, which are identical to or different from one another, each represent a hydroxyl radical or a linear or branched alkoxyl radical having from 1 to 15 carbon atoms;
- the R' symbols, which are identical to or different from one another, each represent a radical comprising from 2 to 50 carbon atoms;
- the Poa symbols, which are identical to or different from one another, each represent groups of polyoxyalkylene ether type;
- the R" symbols, which are identical to or different from one another, each represent a radical comprising from 2 to 50 carbon atoms, which radical can optionally comprise functional groups of -O- ether type;
- the (Epx) symbols represent an epoxy functional group, this functional group being either present as ending of the R" hydrocarbon chain, of the following type:



or in an intermediate position of the R" hydrocarbon chain, of the following type:



it being possible for this intermediate position of this epoxy functional group to be present on a cyclic part of the chain, in particular a ring having from 5 to 7 members;
- the A symbols, which are identical to or different from one another, each represent a monovalent radical chosen from -R, H, -R"-Epx and $-OR^4$,

where R^4 represents a hydrogen or a linear or branched alkyl radical having from 1 to 15 carbon atoms;

- m is an integer or fractional number greater than or equal to 0, preferably between 5 and 200 and more preferably still between 10 and 100;
- n is an integer or fractional number varying from 0 to 5;
- o is an integer or fractional number greater than or equal to 1, preferably between 1 and 100 and more preferably still between 5 and 30;
- p is an integer or fractional number greater than or equal to 2, preferably between 3 and 200 and more preferably still between 10 and 40; and
- q is an integer or fractional number greater than or equal to 0; preferably between 0 and 10.

6. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 5, characterized in that the numbers m, o and p are chosen so as to satisfy the following condition:

- the ratio $(m+n+p+q)/o \leq 10$, preferably between 2 and 8 and more preferably still between 3 and 5.

7. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 5, characterized in that the groups of -R"-Epx type are chosen from the (III), (IV), (V), (VI) and (VII) groups as defined in claim 3.

8. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 5, characterized in that the -R'-Poa groups are chosen from:

$-(CH_2)_3-O-(CH_2CH_2-O)_m-CH_3$; $-(CH_2)_2-O-(CH_2CH_2-O)_m-CH_3$; $-(CH_2)_3-O-(CH(CH_3)-CH_2-O)_m-CH_3$ and $-(CH_2)_2-O-(CH(CH_3)-CH_2-O)_m-CH_3$ with $m \leq 14$.

9. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 1, characterized in that the electrolyte salt (b) is composed:

- of a cation chosen from the group consisting of the following entities: metal cations, ammonium ions, amidinium ions and guanidinium ions; and
- of an anion chosen from the group consisting of the following entities: chloride ions, bromide ions, iodide ions, perchlorate ions, thiocyanate ions, tetrafluoroborate ions, nitrate ions, AsF_6^-, PF_6^-, stearylsulfonate ions, trifluoromethanesulfonate ions, octylsulfonate ions, dodecylbenzene-sulfonate ions, $R^4SO_3^-$, $(R^4SO_2)(R^5SO_2)N^-$ and $(R^4SO_2)(R^5SO_2)(R^6SO_2)C^-$; in each formula, the R^4, R^5 and R^6 radicals are identical or different and represent electron-withdrawing groups.

10. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 9, characterized in that the R^4, R^5 and R^6 radicals are electron-withdrawing groups of perfluoroaryl or perfluoroalkyl type, the perfluoroalkyl groups comprising from 1 to 6 carbon atoms.

11. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 9, characterized in that the electrolyte salt (b) comprises a metal cation chosen from alkali metals and alkaline earth metals of Groups 1 and 2 of the Periodic Table [Chem. & Eng. News, vol. 63, No.5, 26, of February 4 1985].

12. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 11, characterized in that the metal cation is of lithium type.

13. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claims 1 or 11, characterized in that the electrolyte salt (b) is chosen from the group consisting of the following compounds:
$LiClO_4$, $LiBF_4$, $LiPF_6$, $LiAsF_6$, $LiCF_3SO_3$, $LiN(CF_3SO_2)_2$, $LiN(C_2F_5SO_2)_2$ and a mixture of these compounds.

14. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 11, characterized in that the metal cation is chosen from transition metals.

15. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 14, characterized in that the metal cation is chosen from the group consisting of manganese, iron, cobalt, nickel, copper, zinc, calcium and silver.

16. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in one of the preceding claims, characterized in that it comprises an organic electrolyte (d).

17. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 16, characterized in that the organic electrolyte (d) is chosen from the group consisting of the following compounds:
propylene carbonate, ethylene carbonate, diethyl carbonate, dimethyl carbonate, ethyl methyl carbonate, γ-butyrolactone, 1,3-dioxolane, dimethoxyethane, tetrahydrofuran, dimethyl sulfoxide and polyethylene glycol dimethyl ether.

18. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 1, characterized in that the polymerization and/or crosslinking cationic photoinitiator (c) is an onium borate.

19. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 18, characterized in that the onium borate is chosen from those with a formula for which the cationic entity is selected from:

a) onium cations of formula (IX):

$$[(R^1)_n - A - (R^2)_m]^+ \quad (IX)$$

in which formula:

- A represents an element from groups 15 to 17, such as, for example: I, S, Se, P or N;
- R^1 represents a C_6-C_{20} carbocyclic or heterocyclic aryl radical, it being possible for said heterocyclic radical to comprise nitrogen or sulfur as heteroelements;
- R^2 represents R^1 or a linear or branched C_1-C_{30} alkyl or those radical; said R^1 and R^2 radicals optionally being substituted by a C_1-C_{25} alkoxy, C_1-C_{25} alkyl, nitro, chloro, bromo, cyano, carboxyl, ester or mercapto group;
- n is an integer ranging from 1 to v + 1, v being the valency of the element A; and
- m is an integer ranging from 0 to v - 1, with n + m = v + 1,

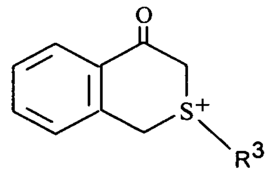
b) organometallic cations of formula (X):

$$(L^1L^2L^3M)^{q+}$$

in which formula:

- M represents a metal from Groups 4 to 10, in particular iron, manganese, chromium or cobalt;
- L^1 represents a ligand bonded to the metal M via π electrons, which ligand is chosen from η^3-alkyl, η^5-cyclopentadienyl and η^7-cycloheptatrienyl ligands and η^6-aromatic compounds chosen from η^6-benzene ligands which are optionally substituted and compounds having from 2 to 4 condensed rings, each ring being capable of contributing via 3 to 8 π electrons to the valence layer of the metal M;
- L^2 represents a ligand bonded to the metal M via π electrons, which ligand is chosen from η^7-cycloheptatrienyl ligands and η^6-aromatic compounds chosen from η^6-benzene ligands which are optionally substituted and compounds having from 2 to 4 condensed rings, each ring being capable of contributing via 6 or 7 π electrons to the valence layer of the metal M; and
- L^3 represents from 0 to 3 identical or different ligands bonded to the metal M via σ electrons, which ligand(s) is (are) chosen from CO and NO_2^+; the total electronic charge q of the complex to which L^1, L^2 and L^3 and the ionic charge of the metal M contribute being positive and equal to 1 or 2;

c) oxoisothiochromanium cations having the formula (XI):



(XI)

where the R^3 radical represents a linear or branched C_1-C_{20} alkyl radical, and

d) the organometallic cations of formula (XIII):

$$(L^1L^2L^3M)^{q+} \quad (XIII)$$

in which formula:

- M represents a metal from Groups 4 to 10;
- L^1 and L^2 each represent a ligand bonded to the metal M via π electrons,
- L^3 represents from 0 to 3 identical or different ligands bonded to the metal M via σ electrons, which ligand(s) is (are) chosen from CO and NO_2^+ ; and
- the total electronic charge q being positive and equal to 1 or 2.

20. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 18, characterized in that the polymerization and/or crosslinking cationic photoinitiator (c) of borate type is chosen from those with a formula for which the borate anionic entity has the formula (XII):

$$[BX_aR_b]^- \qquad (XII)$$

in which formula:

- a and b are integers ranging from 0 to 4 with a + b = 4;
- the X symbols represent a halogen atom (chlorine, fluorine) with a = 0 to 3 and an OH functional group (with a = 0 to 2),
- the R symbols are identical or different and represent:
  . a phenyl radical substituted by at least one electron-withdrawing group chosen from CF_3, NO_2 or CN or by at least 2 fluorine atoms, this being the case when the cationic entity is an onium of an element from Groups 15 to 17,
  . a phenyl radical substituted by at least one electron-withdrawing element or at least one electron-withdrawing group chosen from a fluorine atom, CF_3, NO_2 or CN, this being the case when the cationic

entity is an organometallic complex of an element from the Groups 4 to 10, and/or

. an aryl radical comprising at least two aromatic rings which is optionally substituted by at least one electron-withdrawing element or at least one electron-withdrawing group chosen from a fluorine atom, CF_3, NO_2 or CN, whatever the cationic entity.

21. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 20, characterized in that the anionic entity of the borate is chosen from the group consisting of:

$[B(C_6F_5)_4]^-$	$[B(C_6H_4CF_3)_4]^-$	$[B(C_6H_4CF_3)_4]^-$
$[(C_6F_5)_2BF_2]^-$	$[C_6F_5BF_3]^-$	$[B(C_6H_3F_2)_4]^-$
$[B(C_6F_4OCF_3)_4]^-$.		

22. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 19, characterized in that the cationic entity is chosen from the group consisting of:

$[(\Phi)_2I]^+$	$[C_8H_{17}\text{-}O\text{-}\Phi\text{-}I\text{-}\Phi]^+$	$[(\Phi\text{-}CH_3)_2I]^+$
$[C_{12}H_{25}\text{-}\Phi\text{-}I\text{-}\Phi]^+$	$[(C_8H_{17}\text{-}O\text{-}\Phi)_2I]^+$	$[C_8H_{17}\text{-}O\text{-}\Phi\text{- }I\text{-}\Phi]^+$
$[(\Phi)_3S]^+$	$[(\Phi)_2\text{-}S\text{-}\Phi\text{-}O\text{-}C_8H_{17}]^+$	$[CH_3\text{-}\Phi\text{-}I\text{-}\Phi\text{-}CH(CH_3)_2]^+$
$[\Phi\text{-}S\text{-}\Phi\text{-}S\text{-}(\Phi)_2]^+$	$[(C_{12}H_{25}\text{-}\Phi)_2I]^+$	$[CH_3\text{-}\Phi\text{-}I\text{-}\Phi\text{-}OC_2H_5]^+$

(η5-cyclopentadienyl)(η6-toluene)Fe^+,
(η5-cyclopentadienyl)(η6-1-methylnaphthalene)Fe^+, and
(η5-cyclopentadienyl)(η6-cumene)Fe^+.

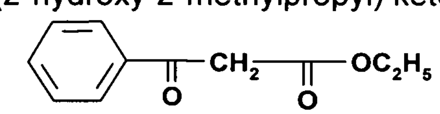
23. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 18, characterized in that the polymerization and/or crosslinking cationic photoinitiator (c) of borate type is chosen from the group consisting of:

$[(\Phi)_2\ I]^+[B(C_6F_5)_4]^-$	$[(C_8H_{17})\text{-}O\text{-}\Phi\text{-}I\text{-}\Phi]^+[B(C_6F_5)_4]^-$
$[C_{12}H_{25}\text{-}\Phi\text{-}I\text{-}\Phi]^+[B(C_6F_5)_4]^-$	$[(C_8H_{17}\text{-}O\text{-}\Phi)_2I]^+[B(C_6F_5)_4]^-$
$[(C_8H_{17})\text{-}O\text{-}\Phi\text{-}I\text{-}\Phi]^+[B(C_6F_5)_4]^-$	$[(\Phi)_3S]^+[B(C_6F_5)_4]^-$
$[(\Phi)_2S\text{-}\Phi\text{-}O\text{-}C_8H_{17}]^+[B(C_6H_4CF_3)_4]^-$	$[(C_{12}H_{25}\text{-}\Phi)_2I]^+[B\ (C_6F_5)_4]^-$
$[(\Phi)_3\ S]^+[B(C_6F_4OCF_3)_4]^-$	$[(\Phi\text{-}CH_3)_2I]^+[B(C_6F_5)_4]^-$

$[(\Phi\text{-}CH_3)_2I]^+[B(C_6F_4OCF_3)_4]^-$ $[CH_3\text{-}\Phi\text{-}I\text{-}\Phi\text{-}CH(CH_3)_2]^+[B(C_6F_5)_4]^-$
(η^5-cyclopentadienyl)(η^6-toluene)$Fe^+[B(C_6F_5)_4]^-$
(η^5-cyclopentadienyl)(η^6-1-methylnaphthalene)$Fe^+[B(C_6F_5)_4]^-$
(η^5-cyclopentadienyl) (η^6-cumene)$Fe^+[B(C_6F_5)_4]^-$
and their mixture.

24. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in one of the preceding claims, characterized in that it comprises at least one aromatic hydrocarbon photosensitizer (e) comprising one or more substituted or unsubstituted aromatic rings having a residual light absorption of between 200 and 500 nm.

25. The composition which can be polymerized and/or crosslinked under irradiation, preferably actinic irradiation and/or by (an) electron beam(s), by the cationic and/or radical route, for a battery electrolyte as claimed in claim 24, characterized in that the photosensitizer (e) is chosen from the group consisting of:

4,4'-dimethoxybenzoin, 2,4-diethylthioxanthone,
2-ethylanthraquinone, 2-methylanthraquinone,
1,8-dihydroxyanthraquinone, dibenzoyl peroxide,
2,2-dimethoxy-2-phenylacetophenone, benzoin,
2-hydroxy-2-methylpropiophenone, benzaldehyde,
4-(2-hydroxyethoxy)phenyl (2-hydroxy-2-methylpropyl) ketone,
benzoylacetone, 

,
2-isopropylthioxanthone, 1-chloro-4-propoxythioxanthone,
4-isopropylthioxanthone
and their mixture.

26. A polymer electrolyte for a battery obtained by polymerization and/or crosslinking by the cationic and/or radical route of a composition as claimed in one of claims 1 to 25.

27. A polymer battery comprising a polymer electrolyte as claimed in claim 26 positioned between an anode and a cathode.

28. The polymer battery as claimed in claim 27, characterized in that at least one of the constituents of the cathode is chosen from the group consisting of the following compounds:
lithium metal, lithium alloys, inorganic materials comprising lithium insertions and carbonate materials comprising lithium insertions.